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Cannabis Use Disorder and Surgery: A Budding Problem?

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For many anesthesiologists, discussions with patients and colleagues about cannabis have been occurring more often. Cannabis, also called marijuana, contains various components that activate the endocannabinoid system including delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD), both of which have been topics of national discourse.[1,2] The need for better evidence regarding the effects of cannabis and its various cannabinoid and non-cannabinoid components that impact the health of patients is especially heightened as cannabis is increasingly viewed by patients as an alternative to opioids. One question relevant to the anesthesiology community is whether patients who have a diagnosis of active cannabis use disorder have an increased risk of negative outcomes after surgery. Here, it is important to differentiate use of cannabis from cannabis use disorder, in which patients have problems from cannabis use that lead to “significant impairment or distress” such as cravings, tolerance, or withdrawal.[3]

In this issue of ANESTHESIOLOGY, Goel and colleagues present results from a retrospective study to test the hypothesis of whether a diagnosis of active cannabis use disorder increases the risk of complications and other negative outcomes prior to discharge from the hospital after surgery.[4] Examining a nationally representative sample, the authors report that a diagnosis of active cannabis use disorder did not result in a worse outcome as measured by the primary outcome of a composite endpoint including in-hospital postoperative myocardial infarction, stroke, sepsis, deep vein thrombosis, pulmonary embolus, acute kidney injury requiring dialysis, respiratory failure, and in-hospital mortality. This observation is important because this study represents a nationally representative sample of adults undergoing elective surgery, which is the largest investigation of its kind to date. This analysis also importantly controls for conditions known or presumed to influence cannabis use, such as the presence of other substance use disorders and certain types of mental health conditions.

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The authors also evaluated several secondary outcomes, including hospital length of stay, total hospital costs, and the individual components of the composite endpoint. One of those, acute myocardial infarction, was associated with cannabis use disorder, and was greater in absolute terms (0.3% vs 0.7%). To assess the risk of worse outcomes after surgery among people with cannabis use disorder alone versus co-morbid cannabis and other substance use disorders, the authors performed a separate match to restrict the study population to those who had no other diagnoses of substance use disorders besides cannabis and found similar results. While this finding regarding the secondary outcome is interesting, the appearance of no difference in the compositive measure of multiple endpoints should be considered in the context of certain limitations, many of which the authors acknowledge. One limitation of many analyses that use administrative data to analyze substance use disorder is that the true incidence of substance use disorder such as cannabis use disorder is likely not accurately captured in claims. The authors appropriately recognize that the sensitivity for a diagnosis of active cannabis use disorder may be suspected to be low, given the likelihood that claims lack an active diagnosis for some population of patients who actually qualify for the diagnosis. If true, this could bias results toward the null. Another point to consider is that the dataset analyzed in this study does not capture additional relevant risk factors prior to surgery. Besides chronic use of medications such as opioids, a more nuanced understanding of mental health diagnoses prior to surgery would help to reduce the possibility of bias.

Goel and colleagues also describe a more than three-fold escalation in the rate of active cannabis use disorder among surgical patients from 2006 to 2015. While cannabis use remains illegal under federal law, cannabis use has become more common in the setting of two different types of state laws. First, state legislatures have passed medical cannabis laws, which authorize the use of cannabis for certain qualifying health conditions. As of 2019, 33 states and the District of Columbia have enacted comprehensive medical cannabis laws, which vary markedly in regard to the scope of health conditions covered.[5] Thirteen additional states have enacted laws allowing access to strains of cannabis that are low in delta-9-tetrahydrocannabinol and high in cannabidiol, principally for treatment of intractable seizure disorders. A smaller contingent—11 states and the District of Columbia—has legislated the recreational use of cannabis, making it widely accessible to adults aged 21+ irrespective of the presence of medical conditions. Based on a recent nationwide survey, more than 43 million persons (16%) reported cannabis use last year, and during this same timeframe more than 4.4 million persons (1.6%) reported cannabis use disorder.[6]

It is reasonable to anticipate that increasing availability and exposure of patients to cannabis may result in more patients reporting cannabis use disorder before surgery if their anesthesiologists and anesthesiology care team ask about cannabis. Questions about cannabis use may be included with related topics such as tobacco and other substance use. The perioperative period provides an important opportunity to counsel patients about behaviors that impact patient health during and after the time of surgery. Recommendations for patients to stop using tobacco products prior to surgery, which derive from a firm foundation of evidence, may provide a useful model for investigators to pursue when studying methods to reduce active cannabis use before surgery.[7] For example, while tobacco cessation prior to surgery was found to be beneficial, additional study revealed that stopping smoking on the day before surgery might be worse than not doing so. Altogether, it is

appropriate to recognize that the data on outcomes associated with cannabis use and surgery are nascent at best, and additional evidence will refine our perspective how cannabis may result in health risks in the perioperative period. In conclusion, while a firm consensus does not yet exist on whether patients who have cannabis use disorder have a higher risk of negative outcomes related to surgery, this study suggests the possibility of increased perioperative risk of myocardial infarction. The overall uncertainty about risks in the perioperative period may be appropriate for anesthesiologists and surgeons to discuss with patients who actively use cannabis.

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References

1. U S Department of Health and Human Services: U.S. Surgeon General's Advisory: Marijuana Use and the Developing Brain 2019 at <https://www.hhs.gov/surgeongeneral/reports-and-publications/addiction-and-substance-misuse/advisory-on-marijuana-use-and-developing-brain/index.html>
2. Siegel DA, Jatlaoui TC, Koumans EH, Kiernan EA, Layer M, Cates JE, Kimball A, Weissman DN, Petersen EE, Reagan-Steiner S, Godfred-Cato S, Moulia D, Moritz E, Lehnert JD, Mitchko J, London J, Zaki SR, King BA, Jones CM, Patel A, Delman DM, Koppaka R: Update: Interim Guidance for Health Care Providers Evaluating and Caring for Patients with Suspected E-cigarette, or Vaping, Product Use Associated Lung Injury — United States, October 2019. MMWR Morb Mortal Wkly Rep 2019; 68:919–27 [PubMed: 31633675]
3. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders. American Psychiatric Association, 2013 doi:10.1176/appi.books.9780890425596
4. Goel A, McGuinness B, Jivraj N, Wijeysundera D, Mittleman M, Bateman BT, Clarke H, Kotra L, Ladha K: Cannabis use disorder and perioperative outcomes in major elective surgeries: a retrospective cohort analysis. Anesthesiology 2019; X:X
5. National Conference of State Legislatures: State Medical Marijuana Laws 2019 at <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>
6. Center for Behavioral Health Statistics and Quality: 2018 National Survey on Drug Use and Health: Detailed Tables Subst Abus Ment Heal Serv Adm Rockville, MD 2018 at <https://www.samhsa.gov/data/nsduh/reports-detailed-tables-2018-NSDUH>
7. American Society of Anesthesiology: Smoking at <https://www.asahq.org/whensecondscount/preparing-for-surgery/risks/smoking/>